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(54) **Three-dimensional modeling apparatus, method of manufacturing a three-dimensional object, and three-dimensional object**

(57) Provided is a three-dimensional modeling apparatus including a supply mechanism, a deposition area, a variable mechanism, a discharge mechanism, and a control means. The supply mechanism supplies a powder material. In the deposition area, the supplied powder material is deposited. The variable mechanism varies a volume of the deposition area per a predetermined layer thickness, and thus the powder material is deposited per the predetermined layer thickness in the deposition area. The discharge mechanism discharges liquid for forming a three-dimensional object to the deposited powder material, the liquid being capable of hardening the powder material. The control means causes the discharge mechanism to discharge the liquid to the powder material, to thereby form a main body being an object being as a target to be modeled and a frame body being an object to be formed in a periphery of the main body, of the three-dimensional object.

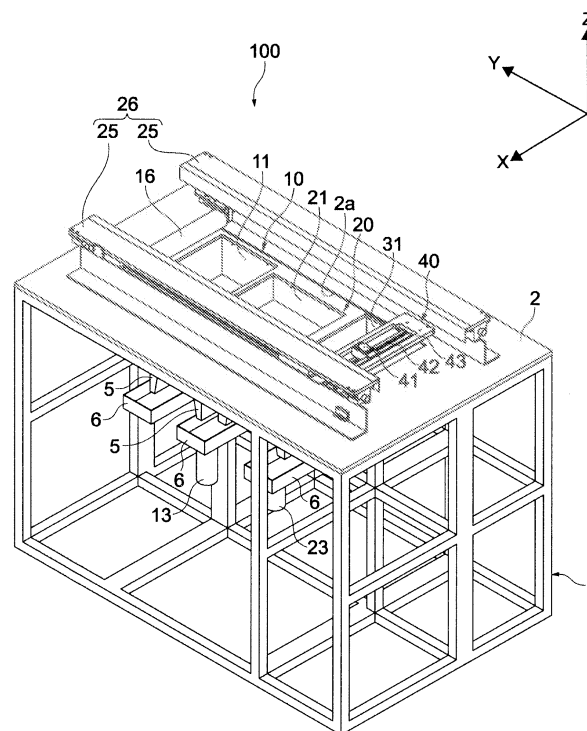


FIG.1



EUROPEAN SEARCH REPORT

 Application Number
 EP 11 15 2191

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2008/001331 A1 (EDERER INGO [DE]) 3 January 2008 (2008-01-03)	1,2,4,5,7-9	INV. B29C67/00
Y	* paragraph [0031] * * paragraph [0033] - paragraph [0034] * * paragraph [0051] * * paragraph [0056] * * paragraph [0060]; figure 1 * * paragraph [0063]; figure 4 *	3,6	
Y	US 2004/173946 A1 (PFEIFER ROLF [DE] ET AL) 9 September 2004 (2004-09-09) * paragraph [0067] - paragraph [0069]; figure 1 * * paragraph [0033] * * paragraph [0040] *	3,6	
X	WO 95/15842 A1 (LASER INT SA [FR]; ALLANIC ANDRE LUC [FR]; MEDARD CLAUDE [FR]; SCHAEFF) 15 June 1995 (1995-06-15) * page 1, line 1 - line 7 * * page 5, line 25 - line 36 * * page 8, line 29 - page 9, line 12; figures 6-9 *	1,4,7-9	TECHNICAL FIELDS SEARCHED (IPC) B29C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 13 September 2016	Examiner Pierre, Nathalie
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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 EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 15 2191

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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13-09-2016

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008001331 A1	03-01-2008	AT 488354 T	15-12-2010
		DE 102006030350 A1	03-01-2008
		EP 1872928 A1	02-01-2008
		ES 2354633 T3	16-03-2011
		US 2008001331 A1	03-01-2008
		US 2010243123 A1	30-09-2010

US 2004173946 A1	09-09-2004	DE 10310385 A1	23-09-2004
		US 2004173946 A1	09-09-2004

WO 9515842 A1	15-06-1995	AT 183686 T	15-09-1999
		CA 2178606 A1	15-06-1995
		DE 69420283 D1	30-09-1999
		DE 69420283 T2	23-03-2000
		EP 0732987 A1	25-09-1996
		FR 2713541 A1	16-06-1995
		US 5824259 A	20-10-1998
		WO 9515842 A1	15-06-1995
